AMENDMENTS TO THE CLAIMS

1. (currently amended) A ~~M~~method ~~for~~ of determining a signal to interference target ratio for operation of the outer loop of ~~the~~ a power control system of a mobile communications system with a cellular infrastructure, wherein the ratio is determined based on a signal received from one of a base station and a mobile station of the mobile communications system,~~characterised by~~ the method comprising:

~~the reception of a signal from the base or mobile station; and~~

~~based on this signal, the calculation of the desired signal to interference target ratio for the outer loop of the power control system. The method includes the following steps:~~

estimating the desired signal to interference ratio of the received signal; ~~and~~

estimating the following statistical moments of the desired signal to interference ratio: typical deviation of the slow or lognormal fading component, typical deviation of the Gaussian distribution describing the joint statistical variation of all interfering signals, and, in the case of a direct beam existing between the emitter and the receiver, the Rice factor, ~~which is~~ comprising the quotient of the deterministic component and the random component of the desired signal; ~~and~~

based on the ~~above~~ estimated statistical moments and on a specification of the outage probability, calculating the margin of the desired signal to interference ratio by the Newton-Raphson iteration method; and

determining the desired signal to interference target ration for the outer loop based on the ~~aforementioned~~ calculated margin~~, obtain the desired signal to interference target ratio for the said outer loop~~.

2. (currently amended) The ~~M~~method according to claim 1, ~~in which~~ further comprising using the numerical approximation for the probability distribution function corresponding to the desired signal to interference ratio of a communication without a direct beam between the emitter and the receiver, wherein the Newton-Raphson method is applied to obtain the margin of the ~~said~~ ratio that will fulfil an outage probability specification~~,~~ for statistical conditions determined by the typical deviation of the slow or lognormal fading

component and the typical deviation of the Gaussian distribution that describes the joint statistical variation of all the interfering signals.

3.   (currently amended) The ~~M~~method according to claim 1, ~~in which~~ further comprising using the numerical approximation for the probability distribution function corresponding to the desired signal to interference ratio of a communication with a non-zero deterministic component corresponding to the existence of a direct beam between the emitter and the receiver, wherein the Newton-Raphson method is applied to obtain the margin of the ~~said~~ ratio that will fulfil an outage probability specification for statistical conditions determined by the typical deviation of the slow or lognormal fading component and the typical deviation of the Gaussian distribution that describes the joint statistical variation of all the interfering signals and the Rice factor~~, which is the quotient between the deterministic component and the random component of the desired signal~~.

4.   (currently amended) The ~~M~~method according to claim 2, ~~in which by a~~ further comprising numerically integrating ~~numerical integration of~~ the probability density function corresponding to the desired signal to interference ratio of a communication without a direct beam between the emitter and the receiver, thereby obtaining an expression ~~is obtained~~ for the outage probability with ~~given~~ the statistical conditions of ~~(~~typical deviation of the slow or lognormal fading component and the typical deviation of the Gaussian distribution that describes the joint statistical variation of all the interfering signals~~)~~, ~~so that~~ wherein the ~~aforementioned~~ expression is suitable for a subsequent application of the Newton-Raphson method ~~described in the said claim~~.

5.   (currently amended) ~~Method~~ The method according to claim 2, ~~in which by a~~ further comprising numerically ~~integration~~ integrating ~~of~~ the probability density function corresponding to the desired signal to interference ratio of a communication with a non-zero deterministic component corresponding to the existence of a direct beam between the emitter and the receiver, thereby obtaining an expression ~~is obtained~~ for the outage probability with ~~given~~ the statistical conditions including ~~(~~typical deviation of the slow or lognormal fading component,

typical deviation of the Gaussian distribution that describes the joint statistical variation of all the interfering signals, and the Rice factor, ~~which is the quotient between the deterministic component and the random component of the desired signal)~~ so that the ~~aforementioned~~ expression is suitable for a subsequent application of the Newton-Raphson method ~~described in the said claim~~.

6.   (currently amended)   A~~n~~ apparatus for implementing the outer loop of the power control system of a mobile communications system with a cellular infrastructure, ~~according to claim 1, characterised by~~comprising:

a receiver ~~that~~ configured to receives ~~the~~ a signal from one of a ~~the~~ base station ~~or~~ and a mobile station of the mobile communications system; ~~and~~

a processor ~~meant~~ configured to implement an operational method for the outer loop of the power control system,

~~in which~~ wherein the processor is configured to estimates the following statistical moments of the desired signal to interference ratio~~;~~: typical deviation of the slow or lognormal fading component, typical deviation of the Gaussian distribution that describes the joint statistical variation of all the interfering signals, and the Rice factor, ~~which is~~ comprising the quotient ~~between~~ of the deterministic component and the random component of the desired signal;

wherein the processor is further configured to calculate, based on these statistical moments and ~~on~~ an outage probability specification, ~~calculates the~~ a margin of the desired signal to interference ratio by the Newton-Raphson iteration method~~;~~, and

wherein the processor is further configured to determine, ~~from this~~ based at least in part on the calculated margin, ~~margin obtains~~ the desired signal to interference target ratio for the aforementioned outer loop.

7. (currently amended)   The Aapparatus according to claim 6, ~~that also includes~~ further comprising an emitter ~~which~~ configured to sends the power control information -to the base station if the apparatus is in the mobile station, or to the mobile station if the apparatus is in the base station.

8. (currently amended)   The ~~A~~apparatus according to claim 6, ~~in which~~ wherein the processor calculates the desired signal to interference ratio by the Newton-Raphson iteration method, and wherein the desired signal to interference ratio ~~which~~ fulfils a given outage probability specification for statistical conditions characterised by the estimated statistical moments.

9. (new)   A computer readable medium having a program for executing a method of determining a signal to interference target ratio for operation of the outer loop of a power control system of a mobile communications system with a cellular infrastructure, wherein the ratio is determined based on a signal received from one of a base station and a mobile station of the mobile communications system, the method comprising:

estimating the desired signal to interference ratio of the received signal;

estimating the following statistical moments of the desired signal to interference ratio: typical deviation of the slow or lognormal fading component, typical deviation of the Gaussian distribution describing the joint statistical variation of all interfering signals, and, in the case of a direct beam existing between the emitter and the receiver, the Rice factor, comprising the quotient of the deterministic component and the random component of the desired signal;

based on the estimated statistical moments and on a specification of the outage probability, calculating the margin of the desired signal to interference ratio by the Newton-Raphson iteration method; and

determining the desired signal to interference target ration for the outer loop based on the calculated margin.